

TRANSMITTAL LETTER
(General - Patent Pending)

Docket No.
UCD-B

In Re Application Of: Yaacov ALMOG

Application No.
10/039,481

Filing Date
January 8, 2002

Examiner
RODEE, C. D.

Customer No.
44909

Group Art Unit
1756

Confirmation No.
1737

Title: **TONER PARTICLES WITH MODIFIED CHARGEABILITY**

COMMISSIONER FOR PATENTS:

Transmitted herewith is:

1. Response to Examiner's Answer dated June 25, 2004
2. Appeal Brief, revised after Examiner's answer

In the above identified application.

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Paul Fenster

Signature

Paul FENSTER, Reg. No. 33,877

Dated: August 24, 2004

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicant: Yaacov ALMOG
Serial Number: 10/039,481
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Alexandria VA 22313-1450

RESPONSE TO EXAMINER'S ANSWER

Sir:

Further to an Examiner's Answer dated June 25, 2004 in the above referenced application, the following is appellant's response:

Items (1)-(5) No comment.

Item (6)-In view of the Examiner's acceptance of argument L claim 45 remains rejected only under 35 U.S.C. §112 (new matter). Claim 45/32 (Group 14) is patentable if argument A is accepted by the board and claim 45/33 (Group 21) is patentable if argument B is accepted by the board. The groups remain independent, since no other group of claims stand and fall with the same combination of arguments as groups 14 and 21.

Item (7)-The Examiner's finding is traversed. It should be quite clear that groups of claims having different combinations of reasons for patentability (arguments) will not stand or fall together. Clearly, if group A has arguments 1 and 2 and Group B has arguments 1 and 3, these groups do not fall together, although they may stand together if argument 1 is accepted. Similarly if Groups B and C are rejected under 35 U.S.C. §112 and also under 35 U.S.C. §102 or §103, and different arguments are advanced to overcome the art rejections, then these groups may fall

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together, if the §112 rejection is upheld, but will not stand together if arguments applicable to only one of the groups is accepted by the board.

However, in order to avoid a further objection by the Examiner, appellant is providing an expanded explanation over several pages in a revised Appeal Brief, submitted herewith.

To avoid confusion, no other changes were made in the Brief, so that this Brief does not reflect any reduction of the issues resulting from the Examiner's answer or the responses to the Examiner's answer given below.

Items (8) and (9) No comment

(10)

The rejection of claims 32-46 Under 35 U.S.C. §112, first paragraph, relies on the arguments made in the Appeal Brief and on further arguments made below with respect to the Examiner's *Response to Argument*.

The Examiner has rejected claims 32-44 and 46 under 35 §103(a) as being unpatentable over EPA 176 630 in view of Whitbread in US Patent 3,325,409 all further in view Handbook of Imaging Materials to Diamond, p. 233, Metcalf in US Patent 3,078,231 and Wagner in US Patent 3,438,904. Alternatively, the examiner has rejected these claims under 35 U.S.C. §103(a) as being unpatentable over EPA 176 630 in view of Electrophotography to Schaffert 69-73, all further in view of Handbook of Imaging Materials to Diamond, P. 233, Metcalfe in US Patent 3,078,231 and Wagner in US Patent 3,438,904.

Appellant relies on the arguments made in the Appeal Brief and on further arguments made below with respect to the Examiner's *Response to Argument*.

(11) Response to Arguments.

The Examiner response to Argument A is basically that appellant is attempting to read limitations from the disclosure into the claims. The Examiner is incorrect. Appellant is relying on the claim language and the general knowledge possessed by a reader (a person of skill in the art) to define the meaning of the claims.

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Claim 32 defines the coating as having the following effect: "wherein said coating provides to said particles a chargability sufficient to give said toner particles said given particle conductivity."

Clearly, the claim makes a clear statement that the chargability of the toner, prior to the coating is *insufficient* to give the toner particles said given particle conductivity. Providing a sufficient chargability does not mean reducing the chargability, it does not mean keeping it the same. Any reasonable reading would understand it to mean that it imparts chargability that was not there or not sufficient before the coating.

Furthermore, even if the Examiner were correct that "providing sufficient chargeability" includes reducing the chargeability or leaving it the same the claim should still be patentable, since the Examiner's rejection is based on a very narrow view of the teaching of the patent. What the patent is teaching is that one can take a toner particle and separate the two functions of the usual single polymer such that a core polymer acts to provide the physical characteristics of the toner, and the coating controls the charge. As stated in the application:

Desired physical characteristics of toner particles is that they have softening points consistent with the temperature capabilities of the final substrate, good adhesion to the substrate and abrasive resistance. To this end toner particles are often formed of polymer materials having these properties and having pigments dispersed therein or which are otherwise colored.

The disclosure teaches providing a core having these properties and having a coating that provides the chargability. The Examiner is correct that the Examples given are no chargability, insufficient chargability and reversal of chargability. However, these are given only because the others that the Examiner claims are included in the claims are just not of interest, since providing the same chargability is a futile exercise and because reducing the chargability (as opposed to reducing the charge) is never considered as a necessity. A person of skill in the art would have realized that these possibilities were within the scope of the invention that was disclosed, but were just not mentioned because they are meaningless.

Alternatively or additionally, for the reasons given in the previous paragraphs, the Examiner is not using the broadest reasonable interpretation of the claims. He is using an unreasonable interpretation of the claims to include useless embodiments.

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As to the Examiner's response regarding appellant's description of the prior art, appellant submits that in order to determine whether a claim is patentable over a combination of references, it is important to understand what each of the references, taken separately, teaches. An attempt to gloss over the direct teaching of a reference, read as a whole, can and often does lead to a picking of features which are basically uncombinable and generating a rejection based on the "combination" of these features. Appellant submits that this is what has happened here.

The prior art teaches dispersing a raw pigment (which needs a coating or some other means to provide a "glue" so that it will fix to the substrate) in an ionomer or possibly coating individual raw pigment particles with an ionomer, perhaps as an intermediate step in forming pigmented particles. (See below, "Reevaluation of the EP Reference.") The prior art also teaches providing a toner particle in which pigment is dispersed in a polymer. *However*, in each of these cases, the prior art teaches the use of a resin which has the requisite electrical and physical properties required of the toner particles. This last statement summarizes what the art teaches, i.e., when producing polymer particles containing a pigment, you should choose a polymer that has "good enough" physical properties and good enough electrical properties. None of the art contradicts this teaching.

The present invention is a real breakthrough in this regard in that it allows for the separation of these requirements. In particular, it provides for a core of pigmented polymer with the requisite physical properties, but not the requisite electrical properties. It then provides a coating, which can be thin, which provides the required chargability to the particles. Since the coating can be thin, the mix of the polymers can still have the physical properties of the core, when the particle is fused and fixed to the final substrate.

The question here is not whether the prior art teaches that there are deficiencies or not. The question is whether there is any teaching at all of coating a pigmented polymer toner particle with another polymer to provide chargability. The answer to this question is clearly no. Considering that the freedom this gives to designers of toner particles is very great, the lack of

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obviousness of the invention is clear. It is further made clear by the age of the references, the high activity in the field of liquid toners and the clear advantages of the invention.

The Examiner has clearly used the present application as a guide in finding unrelated features, which the art would never have combined, to produce a combination that invalidates the claims. The art cited does not need the invention and no person would have been led to the invention, based on the prior art, absent the present application.

Reevaluation of the EP Reference

In view of the Examiner's response to arguments, appellant has again carefully reviewed the EP reference, which is the primary reference. Appellant submits that it does not teach what the Examiner said it teaches. Furthermore, appellant submits that this reference is even further from the present invention than indicated in the summary of the prior art as described in the appeal brief.

Although the EP reference uses the word "coating" to describe what happens to the carbon black, the details given by the EP reference show that at least the final toner particle (after coating and ball milling) is a pigmented particle in which the copolymers are the base and the carbon black is dispersed in the copolymers. This becomes clear when one compares the size of the carbon black (29 and 51 nm, see table 1, page 12) and the size of the particle resulting from the "coating" and ball milling processes, namely 250-300 nm (page 17, lines 17-18). Considering that 1 gram of copolymer and (apparently) 2 grams of complexing agent are used for 4 grams of Printex G, the particle size of 250-300 nm could only be achieved if the resulting particle is a pigmented copolymer particle with carbon black dispersed therein. Simple coating would result in particle sizes that were probably a factor of four or more smaller.

It may be that as an *intermediate* product each carbon black pigment particle is actually coated with copolymer. After the ball milling process these coated particles may actually agglomerate. However, while the exact process is a matter of speculation, the final product, as a pigmented particle in which carbon black is dispersed in the copolymer, is not.

Thus, on further examination, the EP reference does not even teach coating pigment particles. Rather it is just a method of providing pigmented particles, as known in the art, where what is special is the copolymer that is used.

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The Whitbread Reference

Appellant notes that the Examiner has indicated (at page 15, last paragraph of the Answer) that Microlith Carbon Black CT and Microlith blue 4GT are a combination of a raw colorant and a rosin. The Examiner is correct. However, all this means is that the pigments of Whitbread are actually pigmented polymer particles in which the "raw" carbon black or blue colorant is dispersed in a rosin. Whitbread patent uses these "pigments" as is as the toner. In fact, Whitbread states that the scuff resistance is good and can be further improved by dissolving a further ester in the carrier liquid. Thus, Whitbread, when using a toner particle does not coat it at all. Further, it is noted that the EP reference does not use such complex pigments. Rather, the pigments of the EP reference appear to be raw pigments.

It is thus seen that both the EP reference and Whitbread both teach the same thing, namely the use of raw pigment dispersed in a copolymer or resin, with the only differences being the type of copolymer or resin and the method of manufacture.

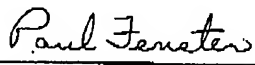
As to the other arguments of the Examiner, appellant relies on the arguments made in the appeal brief, noting that other than accepting argument L, the Examiner has only replied specifically to arguments A-C set forth in the appeal brief.

Conclusion

None of the claims are anticipated and all of the claims are patentable in view of the prior art cited.

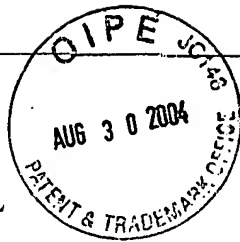
In view of the above arguments, appellant respectfully requests that the Board reverse the ruling of the examiner and allow all the claims.

Respectfully submitted,
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August 24, 2004
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
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Art Unit: 1756

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APPEAL BRIEF (REVISED AFTER EXAMINER'S ANSWER)

Sir:

Further to a Final Office Action dated July 14, 2003 and a Notice of Appeal filed on October 14, 2003, the following is applicant's brief on appeal.

NOTE: In the Examiner's answer, the Examiner indicated that the explanation of the groupings was not sufficient. While applicants disagree, the present revised brief, with a fuller explanation of the reasons is submitted herewith. To avoid confusion, no other changes were made, so that this brief does not reflect any reduction of the issues resulting from the Examiner's answer.

(1) **Real Party of Interest:** The real party of interest in the present application is Hewlett Packard Corporation (HP), a Delaware corporation. Hewlett-Packard Indigo, BV, the assignee of the patent application, is wholly owned by a subsidiary of HP.

(2) **Related Appeals and Interferences:** None

(3) **Status of claims:**

Claims 30-46 are present in the application. All the claims stand rejected.

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(4) Status of Amendments:

An amendment after final was filed on December 30, 2003. This amendment did not amend the claims. Notice of entry has not yet been received. This amendment deals with claiming of domestic priority.

(5) Summary of the Invention:

Polymers used to form toner particles for use in liquid toners should have a variety of characteristics in order to work well. These are divided, in the disclosure, into two types of characteristics, namely physical characteristics and chargeability. See for example, page 3, line 36-page 4, line 7.

Unfortunately, many polymers that have desirable physical characteristics do not charge well or at all. See for example, page 4, lines 13-23.

In the past, the art has tried to find a polymer which has a balance of the physical and charging properties desired. In general, the particles had only a single polymer, or possibly, a mixture of polymers which provided this balance. However, such a balance is seldom optimal for both charging and physical properties.

The disclosure describes a method of coating polymer particles having desirable physical characteristics with an ionomer that has the required chargeability. (Succinctly stated at page 6, lines 32 to page 7, line 8.)

Independent claims 30, 32 and 33 define methods of preparing toner particles having the desired characteristics. These claims mainly differ in their degree of specificity to a particular imaging method in which the toner particles are to be used. In general, all of the independent claims describe a method in which pigment particles that can not be sufficiently charged are dispersed in a liquid to which an ionomer material is added. The ionomer material coats the particles.

(6) Issues:

(i) Are claims 32-46 unpatentable under 35 U.S.C. §112, first paragraph as containing subject matter which was not sufficiently described in the specification?

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(ii) Are claims 32-46 unpatentable under 35 U.S.C. §103 (a) as being unpatentable over EP 0 176 630 in view of US 3,325,409 to Whitbread all further in view of Handbook of Imaging Materials to Diamond, US 3,078,231 to Metcalfe and US 3,438,904 to Wagner?

(iii) Are claims 30-44 and 46 unpatentable under 35 U.S.C. §103(a) as being unpatentable over EP 0 176 630 in view of Electrophotography to Schaffert pp 69-73 all further in view of Handbook of Imaging Materials to Diamond, US 3,078,231 to Metcalfe and US 3,438,904 to Wagner?

Applicant requested that the Examiner provide his rejections on the art in a single document, as required by MPEP §706.07. The Examiner issued a paper dated December 8, 2003, which made this combination. Applicants, in the following discussion, rely on this paper as the definitive statement of the rejections on the art.

(7) Grouping of the Claims

The claims are grouped as follows, according to the set of arguments relevant for each group of claims. These claims stand or fall together, based on the art cited. While not so indicated, claim 45/30 is not rejected either under 35 U.S.C. §112 or §103.

Group 1	Claims 30, 31, (35, 37, 38, 41, 44)/(30 or 31)	Arguments D, E
Group 2	Claim 36/30	Arguments D, E, G
Group 3	Claim 39/30	Arguments D, E, H
Group 4	Claim 40/30	Arguments D, E, I
Group 5	Claim 42/30	Arguments D, E, J
Group 6	Claim 43/30	Arguments D, E, K
Group 7	Claims 32, (35, 37, 38, 41, 44)/32, 46	Arguments A, C, D, E
Group 8	Claim 34,	Arguments A, C, D, E, F
Group 9	Claim 36/32	Arguments A, C, D, E, G
Group 10	Claim 39/32	Arguments A, C, D, E, H
Group 11	Claim 40/32	Arguments A, C, D, E, I
Group 12	Claim 42/32	Arguments A, C, D, E, J
Group 13	Claim 43/32	Arguments A, C, D, E, K
Group 14	Claim 45/32	Arguments A, C, D, E, L
Group 15	Claims 33, (35, 37, 38, 41, 44)/33	Arguments B, C, D

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Group 16	Claim 36/33	Arguments B, C, D, G
Group 17	Claim 39/33	Arguments B, C, D, H
Group 18	Claim 40/33	Arguments B, C, D, I
Group 19	Claim 42/33	Arguments B, C, D, J
Group 20	Claim 43/33	Arguments B, C, D, K
Group 21	Claim 45/33	Arguments B, C, D, L

These groupings constitute groupings of claims that stand *and* fall together, for the following reasons:

Arguments D and E are applicable to Group 1. If argument D or E is accepted by the board, the claims in Group 1 stand. If both arguments D and E fail, then the claims in Group 1 fall. Either argument D or E, if accepted establishes patentability of these claims.

Arguments D, E and G are applicable to Group 2. Thus, if any of arguments D, E or G is accepted by the Board, the claims in Group 2 stand. If all of arguments D, E and G fail, then the claims in Group 2 fall. It is noted that while Groups 1 and 2 stand together they do not fall together since Group 1 can fall (D and E are not accepted) and Group 2 stands (argument G is accepted). Hence the claims in Groups 1 and 2 are properly in different groups.

Arguments D, E and H are applicable to Group 3. Thus, if any of arguments D, E or H is accepted by the Board, the claims in Group 3 stand. If all of arguments D, E and H fail, then the claims in Group 3 fall. It is noted that while Groups 1 and 3 stand together they do not fall together since Group 1 can fall (D and E are not accepted) and Group 3 stands (argument H is accepted). Hence the claims in Groups 1 and 3 are properly in different groups.

Arguments D, E and I are applicable to Group 4. Thus, if any of arguments D, E or I is accepted by the Board, the claims in Group 4 stand. If all of arguments D, E and I fail, then the claims in Group 4 fall. It is noted that while Groups 1 and 4 stand together they do not fall together since Group 1 can fall (D and E are not accepted) and Group 4 stands (argument I is accepted). Hence the claims in Groups 1 and 4 are properly in different groups.

Arguments D, E and J are applicable to Group 5. Thus, if any of arguments D, E or J is accepted by the Board, the claims in Group 5 stand. If all of arguments D, E and J fail, then the claims in Group 4 fall. It is noted that while Groups 1 and 5 stand together they do not fall together since Group 1 can fall (D and E are not accepted) and Group 3 stands (argument J is accepted). Hence the claims in Groups 1 and 5 are properly in different groups.

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Arguments D, E and K are applicable to Group 6. Thus, if any of arguments D, E or K is accepted by the Board, the claims in Group 6 stand. If all of arguments D, E and K fail, then the claims in Group 6 fall. It is noted that while Groups 1 and 6 stand together they do not fall together since Group 1 can fall (D and E are not accepted) and Group 6 stands (argument K is accepted). Hence the claims in Groups 1 and 2 are properly in different groups.

It is noted that if either of arguments D or E are accepted, then all of the claims in Groups 1-6 are allowable. If neither of these arguments are accepted, then groups 2-6 are allowable, if arguments G-J respectively are accepted.

Arguments A, C, D, E are applicable to group 7. If argument A (§112) is not accepted the group (as well as groups 8-14) falls. If Argument A is accepted then the §103 rejections remain. These are overcome by either both arguments C and D being accepted by the board or by argument E being accepted by the board, since Argument C is applicable to the first rejection under 35 U.S.C. §103(a) and Argument D is applicable to the second rejection under 35 U.S.C. §103(a) and argument E is applicable to both rejections. Otherwise, the group falls. It is noted that while Groups 1-7 do have at least one common argument, they do not stand *and* fall together. For example, if either of arguments D and E are accepted, all of Groups 1-6 stand. However, Group 7 can still fall if Argument A fails.

Arguments A, C, D, E and F are applicable to group 8. If argument A (§112) is not accepted the group falls. If Argument A is accepted then the §103 rejections remain. These are overcome by both arguments C and D being accepted by the board or by either of argument E or F being accepted by the board, since Argument C is applicable to the first rejection under 35 U.S.C. §103(a) and Argument D is applicable to the second rejection under 35 U.S.C. §103(a) and arguments E and F are applicable to both rejections. Otherwise, the group falls. Group 8 is separate from Group 7, since if argument A is accepted, and C, D and E fail, then Group 7 falls. However, Group 8 can still stand, if argument F is accepted. Thus groups 7 and 8 do not necessarily *fall* together. Group 8 is distinguished from groups 1-6 in a similar manner as Group 7.

Similarly, Groups 9-14, which use arguments H, I, J, K or L respectively, in addition to arguments A, C, D, E of Group 7 are distinguished from Group 7, by the presence of the additional argument which allows them to stand separately from Group 7. They are distinguished from Groups 1-6, *inter alia* by argument A, which, if not accepted, causes them to fall even if Groups 1-6 stand.

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To summarize the arguments for groups 7-14, Argument A is relevant to rejection of claims 32 and 46 (and dependent claims) under 35 U.S.C. §112. If argument A is not accepted, then all of groups 7-14 fall. However, if argument A is accepted and either arguments C and D or E are accepted, then all of groups 7-14 stand. If none of these three arguments are accepted, then groups 8-14 are allowable, if arguments F-L, respectively, are accepted.

Arguments B, C, D are applicable to group 15. If argument B (§112) is not accepted then Group 15 falls. If Argument B is accepted then the §103 rejections remain. These are overcome by both arguments C and D being accepted by the board since Argument C is applicable to the first rejection under 35 U.S.C. §103(a) and Argument D is applicable to the second rejection under 35 U.S.C. §103(a). It is noted that while Groups 1-6 and 15 do have at least one common argument, they do not stand *and* fall together. For example, if argument D is accepted, all of Groups 1-6 stand. However, Group 7 can still fall if Argument B fails. Group 15 is distinguished from Groups 7-14 in that Groups 7-14 all fail if argument A fails, while this failure does not effect Group 15. Group 15 fails if argument B fails, which does not affect groups 1-14. Thus none of the groups stand and fall together.

Arguments B, C, D, and G are applicable to group 16. If argument B (§112) is not accepted then Group 16 falls. If Argument B is accepted then the §103 rejections remain. These are overcome by either both arguments C and D or argument G being accepted by the board since Argument C is applicable to the first rejection under 35 U.S.C. §103(a) and Argument D is applicable to the second rejection under 35 U.S.C. §103(a), while argument G is applicable to both §103(a) rejections. Group 16 is separate from Group 15, since if argument A is accepted, and C, D fail, then Group 15 falls. However, Group 16 can still stand, if argument G is accepted. Thus groups 15 and 16 do not necessarily fall together. Group 16 is distinguished from groups 1-14 in a similar manner as Group 15.

Similarly, Group 17-21, which use arguments H, I, J, K or L respectively, in addition to arguments B, C and D of Group 15 are distinguished from Group 15, by the presence of the additional argument which allows them to stand separately from Group 15. They are distinguished from Groups 1-14, *inter alia* by argument B, which, if not accepted, causes them to fall even if Groups 1-14 stand.

To summarize the arguments for groups 15-21, argument B is relevant to rejection of claim 33 (and dependent claims) under 35 U.S.C. §112. If argument B is not accepted, then all of groups 15-21 fall. However, if argument B is accepted and both of arguments C, D, are accepted,

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then all of groups 15-21 stand. If none of these arguments are accepted, then groups 16-21 are allowable, if arguments G-L respectively, are accepted.

(8) Arguments:

Argument A: (Applicable to independent claim 32, to claims 34-45 as dependent on claim 32 and to claim 46.)

Independent claims 32 and 46 state that the toner particles are for use in an electrostatic imaging method, which requires that the toner have a given particle conductivity and that the coating provides to the toner particles a chargeability such that they can be used in the method.

The Examiner contends that this is beyond the scope of the teaching of the disclosure. In the office action dated February 13, 2003, to which the Examiner refers in the final action, the Examiner states that the application only defines particles that are unchargeable and that have little or no utility in practical applications in electrostatic imaging. The Examiner further states that the claims as presented also cover cases where the particles have some utility in (other) electrostatic imaging processes, and thus, the claims are broader than the specification.

Applicant directs the Board's attention to, Figs. 1-3 and to page 9, lines 8-40, page 10, lines 34-38, and page 12, lines 15-34. As seen in Figs. 1-3, the pigmented core polymer particles used do have some conductivity. As the *Examiner* pointed out in the parent application, the amount of conductivity varies from process to process and that particles with any chargeability can be used in some process. It is clear from Figs. 1-3 and would be clear to a person of ordinary skill in the art, faced daily with this problem, that the invention is concerned with taking toner particles that are somewhat chargeable and increasing their chargeability so that they are usable in a *particular* process. Whether these particles could be used in some other, perhaps theoretical, process is clearly not relevant to the utility as defined by the examples, as this utility would be clear to a person of ordinary skill in the art.

Further, Applicant points out that, as would be appreciated by a person of ordinary skill in the art, an aspect of the invention is that the chargeability or conductivity of toner particles is enhanced by the coating applied. While the uncoated toner particles can, for example, initially have such a low chargeability that the particles are completely unusable in any electrostatic processes, it would be clear to a person of ordinary skill in the art that

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if the toner particles in the examples had higher levels of chargeability initially, the coated toner particles would have had correspondingly the higher levels of chargeability conferred by the coating. Thus, a person of ordinary skill in the art would understand that the application teaches enhancement of the type claimed in claims 32 and 46, where the particles are to be matched to the requirements of a particular process.

Furthermore, the Examiner, in the final rejection indicated that the claims might cover increases in charge, having the same charge and decreasing the charge. A simple reading of the claims shows that only an increase in the charge is defined, since claims 32 and 46 define the coating as *providing* a sufficient chargeability, indicating that it did not have same without the coating.

Argument B: (Applicable to independent claim 33 and to claims 35-45 as dependent on claim 33.)

Claim 33 is similar to claim 32, except that it is much more explicit that claim 32 as to the characteristics of the core pigmented particles, in that they are defined as being unusable in a given process since they do not charge enough.

Applicant submits that this is exactly what a person of the art would have understood as the utility of the methodology or chargeability increase taught by the disclosure and shown in the figures.

Thus, all of the reasons given in Argument A are applicable to claim 33 as well, except that the argument in the last paragraph of Argument A is moot, in view of the more specific wording of claim 33.

Summary of the cited prior art.

The primary reference is EP 0176 630. The EP publication teaches a method of producing a toner particle for liquid toner, in which a *pigment* is coated with an ionomer. One assumes that the ionomer material had a desired mix of physical properties and chargeability so that the toner particle could be used in an electrostatic imaging process. This is explicitly stated at page 1, lines 25-28.

It is noted that pigments *per se* are not generally used alone as toner particles, since there is nothing in the pigments to adhere them to a substrate. The pigments are either dispersed in a

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polymer, coated with a polymer or (in some very old systems) dispersed in a polymer that is dissolved in a carrier liquid. In this last system, when the liquid dries, the dissolved polymer attaches to the substrate and entraps the pigment.

The EP reference teaches a pigment that is coated with an ionomer. Clearly, the ionomer has been chosen as a trade-off between chargeability and physical properties as indicated above in the summary of invention and in the referenced portions of the application. The abstract, for example, describes the coated pigment as "acting as toner particles." The objective (and result) of the EP reference is to provide toner particles in which the pigment particles are each coated with a polymer (or resin mixture) that give all the desired properties of the toner.

The EP reference describes two different ways to produce the coated pigment. In one method, the coating material is dissolved in the carrier liquid (no temperature is given, so room temperature is assumed) and becomes attached to it. In the other, the coating material is dissolved in the carrier liquid which is evaporated, leaving coated pigment.

Whitbread, a secondary reference in one of the rejections, teaches no more than the standard method of dispersing the pigment in a polymer. It says nothing about a process of forming a pigmented polymer particle and then coating it with an ionomer to impart a desired amount of chargeability. The end result is clearly stated to be a toner particle. (For example, at col. 1, line lines 38-39.) The objective (and result) of the Whitbread reference is to provide a toner particle in which the pigment is dispersed in a polymer to form a toner particle that has all the desired properties of the toner.

The Schaffert document, which is the secondary reference in the other rejection also does no more than teach the prior art methods of making a toner in accordance with the methods described above. Again, a pigment is used together with a binder to form toner particles. The objective (and result) of the Schaffert reference is to provide a toner particle in which the pigment is dispersed in a polymer to form a toner particle that has all the desired properties of the toner.

None of these three references (nor any of the cited references, for that matter) teach *anything* at all about taking a pigmented polymer particle and coating it with a different material to adjust the chargeability. They both define methods of making toner particles, as best they can, in accordance with the prior art, namely, by using a polymer or mixture of polymers to provide the desired properties, both physical and electrical.

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The Examiner indicates at the top of page 4 of the clarifying document that "It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the *pigment* of Whitbread as the pigment in the European Document..."

The Examiner has mischaracterized the teaching of Whitbread, which teaches the production of a *toner* and not of a pigment, coated or otherwise. In fact, the method employed by Whitbread might actually result in toner particles that comprise pigment dispersed in polymer particles. There is certainly no teaching in Whitbread of producing a *pigment* and no characterization of the toner produced by Whitbread as being anything other than a toner.

Furthermore, it is noted that none of the three main references say that there is anything lacking in their toner. None of them indicates that adhesion is poor, and none indicates a lack of chargeability. Of course, some at least discuss the factors that effect chargeability, but always in the context of choosing a proper toner polymer.

Argument C (Applicable to claims 32, 33 and 46 and claims dependent therefrom.)

This argument is applicable to the rejection of claims 32-46 in view of 5 publications. Applicant submits that the Examiner has not provided a *prima facie* case of lack of patentability. The basic act in independent claims 32, 33 and 46 is the coating of *pigmented polymer particles* with an ionomer. The cited prior art never coats anything other than a pigment with anything, let alone with an ionomer. A person of the art, having all the cited art available would not have found any motivation in coating the finished *toner* particles of Whitbread, which are usable *as is* as toner particles, with anything and certainly not with the ionomer of the EP publication, which is described therein as being used to coat *pigment* which must be treated somehow to be used as a toner. The Examiner has indicated that it would be obvious to coat a particle that is already suitable for use as a toner with another material, based on a reference that defines use of such coating only with respect to *pigment* which is not generally usable as a toner particle. Applicant respectfully submits that the Examiner is wrong.

Applicant submits that the Examiner has taken two acts, which are never combined in the prior art, because there is neither a perceived need nor an actual need to do so, and combine them based solely on the teaching of the present application. The prior art cited contains no teaching of separating the functions of charging from the physical properties of toner particles by coating the particles with an ionomer. Applicant notes, although this is certainly not definitive, that the Examiner has needed 5 references to find the present claims obvious. While the Examiner is not

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limited in the number of references used, in the present case, in which the idea is so simple (with hindsight) the use of many references calls into serious question their *obvious* combination. This is especially true in an active field such as the present one and the age of the references.

Argument D (Applicable to claims 30, 32, 33 or 46 and claims dependent therefrom.)

This argument is applicable to the rejection of claims 30-44 and 46 in view of 5 publications. It is essentially similar to the rejection discussed in Arguments C, except that the Electrophotography volume to Schaffert replaces the Whitbread reference. In essence, the Examiner utilizes Schaffert as motivation to coat pigmented polymer particles with an ionomer to improve chargeability. All of the elements assigned by the Examiner to Schaffert are there.

The inference that the combination would be obvious is, however, not correct. The Schaffert reference, as with all the other cited references, teaches that a useful toner particle is produced by providing a polymer coating or polymer based dispersion media for the pigment which polymer has all the necessary attributes for toner particles, physical and electrical.

In essence, the Examiner has indicated that the prior art somehow makes the coating of a toner particle to be an obvious act. However, there is no hint of doing so anywhere but in the present application.

Argument E (Applicable to claims 30, 32 and 46 and claims dependent on claim 30 and 32.)

The Examiner has not provided a *prima facie* case of unpatentability with respect to claims 30, 32 and 46. Claims 30, 32 and 46 require that the ionomer not be soluble at room temperature. In the Examples of the EP publication, the ionomer is soluble at the temperature of preparation, which is not given and can be assumed to be room temperature.

Argument F (Applicable to claim 34.)

The Examiner has not provided a *prima facie* case of unpatentability with respect to claim 34. Claim 34 claims a coating method which is completely different from that of the EP reference. In claim 34, the ionomer is heated to make it dissolve and then cooled so that it coats the toner particles. The methods described in the EP reference (as discussed above in the discussion of the prior art) is completely different.

Argument G (applicable to claim 36)

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The Examiner has not provided a *prima facie* case of unpatentability with respect to these claims, since the EP reference, the only source of the cited ionomer coating, does not teach an ionomers, based on the claimed acid.

Argument H (Applicable to claim 39)

The Examiner has not provided a *prima facie* case of unpatentability with respect to these claims, since the EP reference, the only source of the cited ionomer coating, does not teach an ionomers, based on the claimed acid.

Argument I (Applicable to claim 40)

The Examiner has not provided a *prima facie* case of unpatentability with respect to these claims, since the EP reference, the only source of the cited ionomer coating, does not teach an ionomers, based on the claimed acid.

Argument J (Applicable to claim 42)

The Examiner has not provided a *prima facie* case of unpatentability with respect to claim 42. Claim 42 requires the coating to be less than 10% of the particle weight. The coatings in the EP reference (which is the only reference with coating of any kind) is 20%. Since the coating does not necessarily have good physical properties, reducing the coating thickness is desirable.

Arguments K (Applicable to claim 43)

The Examiner has not provided a *prima facie* case of unpatentability with respect to claim 43. Claim 43 requires the coating to be less than 5% of the particle weight respectively. This is even lower than that provided in claim 42. The coatings in the EP reference (which is the only reference with coating of any kind) is 20%. Since the coating does not necessarily have good physical properties, reducing the coating thickness is desirable.

Argument L (applicable to claims 45/32 and 45/33.)

The Examiner has not made a *prima facie* case of obviousness with respect to claim 45. As indicated above, claim 45/30-31 appears to be allowed. As to the other dependencies of claim 45, this claim claims specific values of pre-coating conductivity that are not taught by the prior art.

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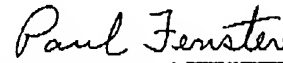
(9) Conclusion

None of the claims are anticipated and all of the claims are patentable in view of the prior art cited.

In view of the above arguments, applicant respectfully requests that the Board reverse the ruling of the examiner and allow all the claims.

Applicant attaches an appendix of the claims under appeal.

Respectfully submitted,
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January 14, 2004 (resubmitted August 24, 2004)

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Appendix - Claims under Appeal

30. A method for preparing a liquid toner for electrostatic development of electrostatic images, which method comprises:

- dispersing pigmented particles in an insulating non-polar liquid;
- mixing at least one ionomer, which is not soluble at room temperature, with the liquid containing pigmented polymer particles;
- coating the pigmented polymer particles with the at least one ionomer; and
- adding at least one charge director to the liquid containing the coated pigmented polymer particles

wherein the pigmented polymer comprises a material suitable for use as a toner material in an electrostatic image development application, but which in the presence of charge director alone is unchargeable or not chargeable to an extent suitable for electrostatic development of electrostatic images and

wherein the at least one ionomer is used in an amount effective to impart enhanced chargeability to the toner particles to an extent that the particles can be used to develop an electrostatic image.

31. A process for electrostatic development of electrostatic images which comprises:

- forming a charged latent electrostatic image on a photoconductive surface;
- applying to the charged surface charged particles from a liquid toner prepared according to the method of claim 30; and
- transferring the resulting toner image to a substrate.

32. A method for producing a liquid toner for an electrostatic imaging method, which method requires that said toner particles comprise toner particles having a given particle conductivity, said method for producing a liquid toner comprising:

- dispersing pigmented particles in an insulating non-polar liquid to form a dispersion;

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mixing at least one ionomer which is not soluble at room temperature with the dispersion to form a mixture;

coating the pigmented polymer particles with the at least one ionomer; and

adding at least one charge director to the mixture,

wherein said coating provides to said particles a chargability sufficient to give said toner particles said given particle conductivity.

33. A method for preparing a liquid toner for a particular process of electrostatic development of electrostatic images, said particular process requiring a given level of toner charge, the toner comprising chargeable toner particles dispersed in a carrier liquid and at least one charge director, the method comprising:

providing at least one charge director;

providing a toner precursor material comprising toner precursor particles dispersed in an insulating non-polar carrier liquid, the particles comprising a core material including a pigmented polymer suitable for use as a toner material in the particular process for electrostatic development of electrostatic images, but which is unchargeable by the at least one charge director or which is weakly chargeable by the at least one charge director to an extent that it is not useable in electrostatic development of latent images in the particular process;

coating the toner precursor particles with at least one ionomer component in an amount effective to impart enhanced chargeability to the pigmented polymer to an extent that the coated particles can be used to develop a latent electrostatic image in the particular process for electrostatic development of electrostatic images, thereby forming said chargeable toner particles, and

adding said at least one charge director, in an amount suitable for charging the chargeable toner particles to said given level.

34. A method according to claim 32, wherein the at least one ionomer is first heated to a temperature at which the at least one ionomer dissolves in the carrier liquid and then is

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cooled to a temperature where the at least one ionomer is not soluble in the carrier liquid, thereby coating the particles with the at least one ionomer.

35. A method according to any of claims 30-33 wherein the particles are pigmented synthetic resin particles.

36. A method according to any of claims 30-33 wherein the at least one ionomer is carboxylic acid based and neutralized with metal salts forming ionic clusters.

37. A method according to any of claims 30-33 wherein the at least one ionomer is methacrylic acid based and neutralized with metal salts forming ionic clusters.

38. A method according to any of claims 30-33 wherein the at least one ionomer is sulfonic acid based and neutralized with metal salts forming ionic clusters.

39. A method according to any of claims 30-33 wherein the at least one ionomer is phosphoric acid based and neutralized with metal salts forming ionic clusters.

40. A method according to any of claims 30-33 wherein the at least one ionomer is ethelene acid based and neutralized with metal salts forming ionic clusters.

41. A method according to any of claims 30-33 wherein the coating comprises less than 20 percent by weight of the particles.

42. A method according to any of claims 30-33 wherein the coating comprises less than 10 percent by weight of the particles.

43. A method according to any of claims 30-33 wherein the coating comprises less than 5 percent by weight of the particles.

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44. A method according to any of claims 30-33 wherein the coating comprises a thickness of greater than 0.02 micrometers.
45. A method according to any of claims 30-33, wherein the pigmented polymer particles are chargeable by the at least one charge director to less than about 7 pmho/cm, in the absence of said coating.
46. A method for producing a liquid toner for an electrostatic imaging method which requires that said toner comprise toner particles having a given particle conductivity, said method for producing a liquid toner comprising:
- dispersing pigmented polymer particles in an insulating non-polar carrier liquid to form a dispersion;
 - mixing at least one ionomer which is not soluble at room temperature with the dispersion to form a mixture;
 - coating the polymer particles with the at least one ionomer; and
 - adding a charge director to said mixture,
- wherein said coating provides to said polymer particles a chargeability sufficient to impart said toner particles particle conductivity to the extent that said particles can be used to develop a latent electrostatic image in the electrostatic imaging method.



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For: TONER PARTICLES WITH MODIFIED CHARGEABILITY
Enclosures: (1) Transmittal Letter (2 pages); (2) Response To Examiner's Answer (6 pages) (filing in triplicate); (3) Appeal Brief - Revised After Examiner's Answer (17 pages) (filing in triplicate); (4) Acknowledgement Postcard

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